IMPORTANT SAFETY INSTRUCTIONS

When using your photographic equipment, basic safety precautions should always be followed, including the following:

1. Read and understand all instructions before using.

2. Close supervision is necessary when any appliance is used by or near children. Do not leave appliance unattended while in use.

3. Care must be taken as burns can occur from touching hot parts.

4. Do not operate appliance with a damaged cord or if the appliance has been dropped or damaged—until it has been examined by a qualified serviceman.

5. Position the cord so that it will not be tripped over, pulled, or contact hot surfaces.

6. If an extension cord is necessary, a cord with a current rating at least equal to that of the appliance should be used. Cords rated for less amperage than the appliance may overheat.

7. Always unplug appliance from electrical outlet before cleaning and servicing and when not in use. Never yank cord to pull plug from outlet. Grasp plug and pull to disconnect.

8. Let appliance cool completely before putting away. Loop cord loosely around appliance when storing.

9. To reduce the risk of electric shock, do not immerse this appliance in water or other liquids.

10. To reduce the risk of electric shock, do not disassemble this appliance, but take it to a qualified serviceman when service or repair work is required. Incorrect reassembly can cause electric shock when the appliance is used subsequently.

11. The use of an accessory attachment not recommended by the manufacturer may cause a risk of fire, electric shock, or injury to persons.

12. Connect this appliance to a grounded outlet.

13. Disconnect this unit from its source of supply before replacing the projection lamp.

SAVE THESE INSTRUCTIONS

INTRODUCTION

Congratulations on the purchase of your new *KODAK EKTAGRAPHIC* AudioViewer/Projector.

Please study this instruction manual. Knowing how your Audio-Viewer/Projector works will help you to communicate your message to your audience more effectively.

The current family of *KODAK EKTAGRAPHIC* AudioViewer/Projectors has four models: the Models 220, 270, 470, and 570AF.

The Model 220 is a minimum-investment machine for playback of synchronized sound-slide programs for almost any application in which automatic slide projection with sound for an individual or a small group is required.

The Model 570AF provides additional features for maximum equipment versatility, such as autofocus capability and a variable electronic timer for silent automatic slide advance.

The Models 270 and 470 offer a range of features in between these two models to satisfy your particular needs.
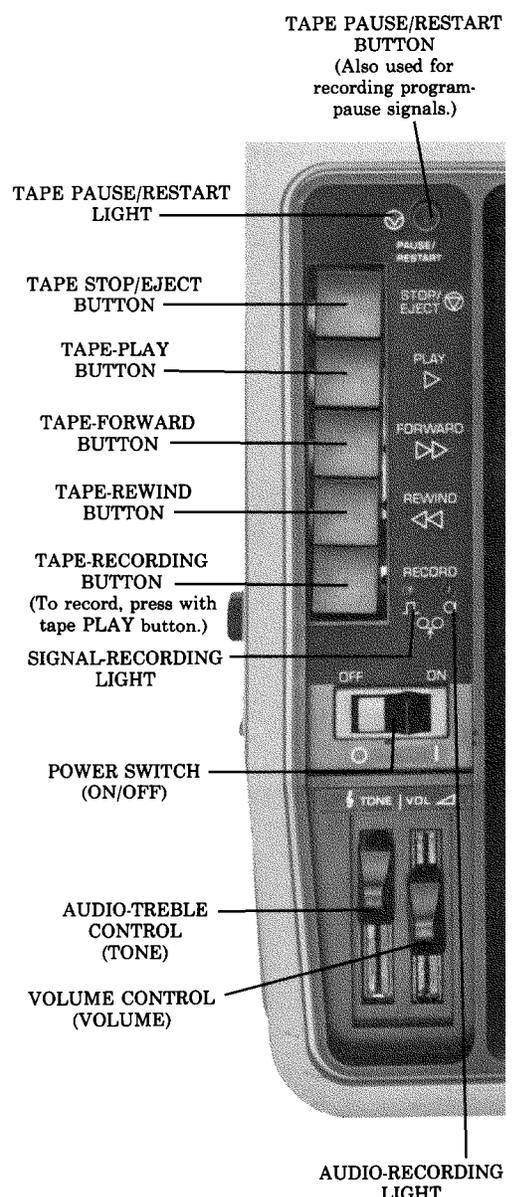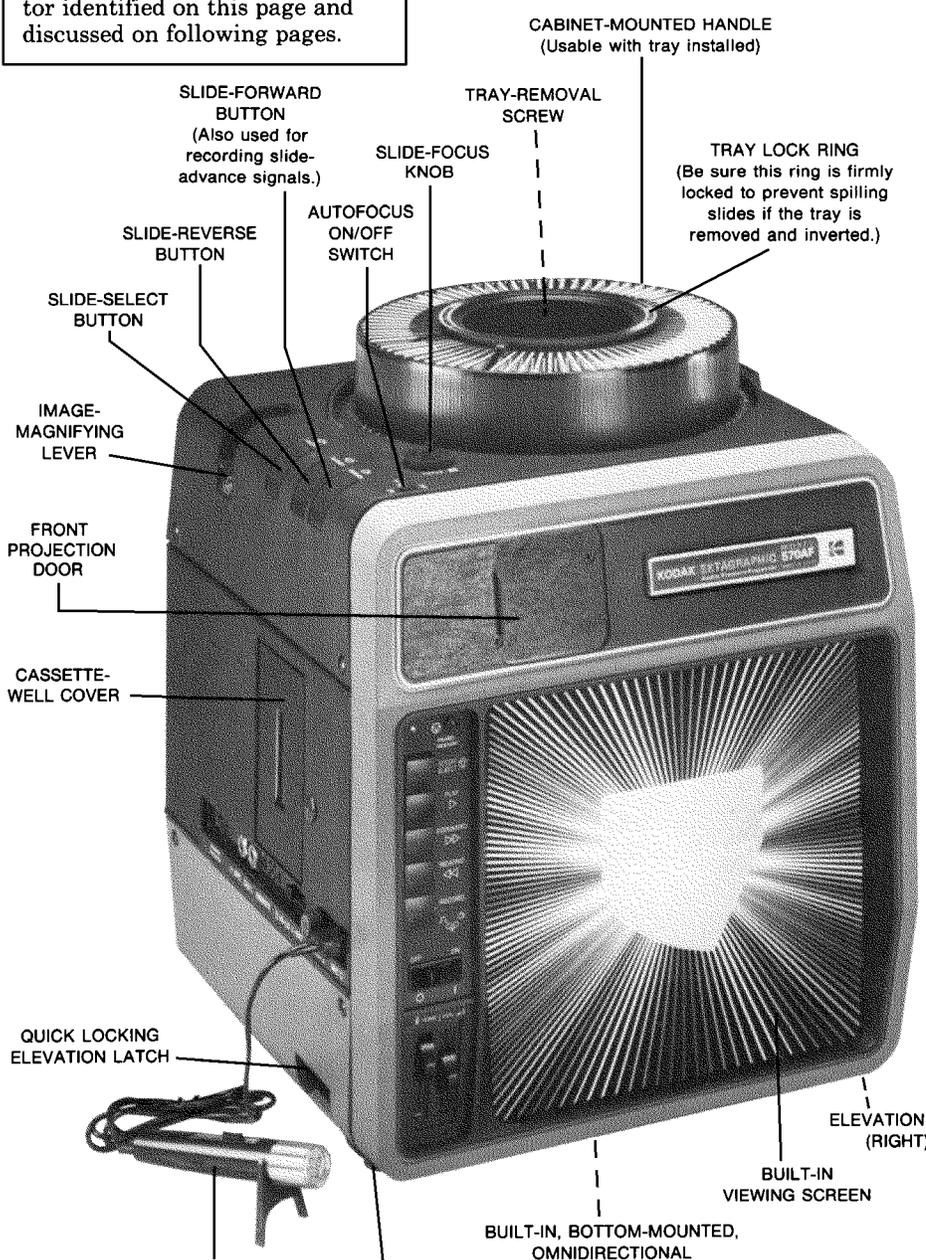
> **IMPORTANT: This instruction manual explains all of the operational features of our top-of-the-line AudioViewer/Projector—the Model 570AF. It therefore describes in detail features that *your* AudioViewer/Projector may *not* have.**

To become familiar with the features provided by *your* Audio-Viewer/ Projector, and to make this instruction manual as useful to *you* as possible, scan the list of features under "Standard Features of the Current Line of *KODAK EKTAGRAPHIC* AudioViewer/Projectors;" then study the "Feature Comparison Chart—*KODAK EKTAGRAPHIC* AudioViewer/Projectors" so that you will be able to identify the instructions that apply to *your* machine. (For your convenience, specific AudioViewer/Projector models are identified in the instructions, where appropriate.)

For Help

If you ever need technical assistance with your AudioViewer/ Projector, please contact your local dealer in *Kodak* audiovisual products or call Kodak at 1-800-242-2424 from 9 a.m. to 8 p.m., (eastern time zone) Monday through Friday.

This page is designed to be left open so that you can simultaneously refer to controls and features of the AudioViewer/Projector identified on this page and discussed on following pages.

TAPE PAUSE/RESTART BUTTON
(Also used for recording program-pause signals.)

CABINET-MOUNTED HANDLE
(Usable with tray installed)

TAPE PAUSE/RESTART LIGHT

SLIDE-FORWARD BUTTON
(Also used for recording slide-advance signals.)

TRAY-REMOVAL SCREW

SLIDE-FOCUS KNOB

TRAY LOCK RING
(Be sure this ring is firmly locked to prevent spilling slides if the tray is removed and inverted.)

TAPE STOP/EJECT BUTTON

AUTOFOCUS ON/OFF SWITCH

SLIDE-REVERSE BUTTON

TAPE-PLAY BUTTON

SLIDE-SELECT BUTTON

TAPE-FORWARD BUTTON

TAPE-REWIND BUTTON

IMAGE-MAGNIFYING LEVER

TAPE-RECORDING BUTTON
(To record, press with tape PLAY button.)

FRONT PROJECTION DOOR

SIGNAL-RECORDING LIGHT

POWER SWITCH
(ON/OFF)

CASSETTE-WELL COVER

AUDIO-TREBLE CONTROL
(TONE)

VOLUME CONTROL
(VOLUME)

QUICK LOCKING ELEVATION LATCH

AUDIO-RECORDING LIGHT

ELEVATION LEG
(RIGHT)

BUILT-IN VIEWING SCREEN

BUILT-IN, BOTTOM-MOUNTED, OMNIDIRECTIONAL LOUDSPEAKER

OMNIDIRECTIONAL, HAND-HELD MICROPHONE
(Models 270, 470, and 570AF)

ELEVATION LEG
(LEFT)

THREE-POSITION PROJECTION-LAMP SWITCH (HI/LO/EXTERNAL PROJECTOR)

MICROPHONE JACK

EXTERNAL-PROJECTOR INTERCONNECT OUTLET

HEADPHONE OUTLET

REMOTE TAPE-CONTROL JACK

EXTERNAL-LOUDSPEAKER OUTLET (SPK)

REMOTE-CONTROL OUTLET

VARIABLE ELECTRONIC TIMER (automatic slide advance: 2-24 seconds)

Serial Number

The serial number of your Audio-Viewer/Projector is located on the data plate on the bottom of your machine. Record it for future reference.
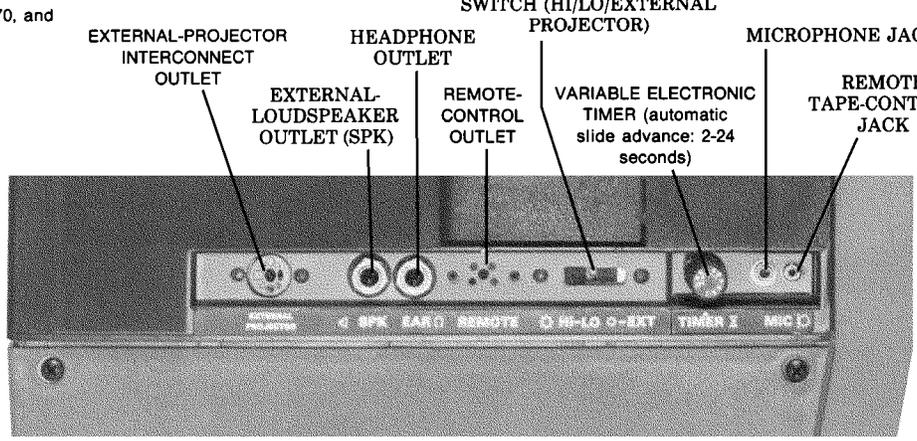
TABLE OF CONTENTS

FEATURE COMPARISON CHART—THE *KODAK EKTAGRAPHIC* AUDIOVIEWER/PROJECTOR, MODELS 220, 270, 470, AND 570AF

Features	Models			
	220	270	470	570AF
Plays programs that conform to ANSI Standard PH7.4-1975	●	●	●	●
Erases, records, and plays back audio and slide-advance pulses (visual recording light, omnidirectional microphone, microphone jack, and remote tape-control jack included).		●	●	●
Erases, records, and plays back automatic program-pause signals (tape restart button and tape-stop visual indicator included).			●	●
Autofocus capability with ON/OFF switch				●
Variable electronic timer provides silent automatic slide advance. (Rates: 2-24 seconds)				●

STANDARD FEATURES OF THE CURRENT LINE OF *KODAK EKTAGRAPHIC* AUDIOVIEWER/PROJECTORS

- Will play programs conforming to ANSI Standard PH7.4-1975.*
- Image viewing on built-in viewing screen or external front-projection screen. (External screen not provided.)
- Image-magnifying lever to enlarge images by about 50 percent.
- External-projector interconnect outlet allows control of external slide projector (or dissolve control and two slide projectors) for use with a variety of projection lenses.
- Choice of manual forward-and-reverse projection with push buttons on the machine or with optional remote control.
- Manual focus knob for convenient focus adjustment.
- Will accept any *KODAK* Slide Tray (except Pocket *CAROUSEL* Slide Trays). NOTE: Tray not included with AudioViewer/Projector.
- Will accept *KODAK* EC Stack Loader (for forward operation only).
- Dark-screen shutter blocks projection light beam when gate is empty.
- Automatic end-of-tape stop helps prevent damage to tape. (Tape-control buttons return to their released position when tape ends.)
- HI/LO/EXT (High, Low, External-Projector) projection-lamp switch provides high brightness, extended-life brightness, or turns the lamp off when an external slide projector (or dissolve control and two slide projectors) is being advanced by the built-in tape deck, slide-forward button, or variable-electronic timer (Model 570AF only) of the AudioViewer/Projector.
- Adjustable legs provide quick image elevation.
- Built-in omnidirectional loudspeaker.
- Separate outlets for an external loudspeaker and headphones.
- Convenient slide tray storage.
- Foldaway handle (usable with tray installed).
- Coin-slotted tray-removal screw for removing tray when slide is jammed in gate.
- Thermal fuses to prevent overheating.
- Permanently attached three-wire grounded power cord.
- Slide-change time of 1 second (about the same as a *KODAK EKTAGRAPHIC* III Projector).
- UL listed.
- CSA Certified.

*A copy of this Standard can be purchased from the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

OPERATING INSTRUCTIONS

To play back a sound-slide program with your *KODAK EKTAGRAPHIC* AudioViewer/ Projector, follow the steps listed below:

You will need a program recorded in conformance with ANSI Standard PH7.4—1975. (Any program recorded with an *EKTAGRAPHIC* AudioViewer/Projector or *EKTAGRAPHIC* AudioViewer can be used.)

Preparing the AudioViewer/ Projector for Program Playback

1. **Place the AudioViewer/ Projector on a sturdy support.** (The rubber feet are nonmarring.)

2. **Turn the storage-door latches on the back of the Audio-Viewer/Projector counterclockwise and open the storage door from the top.**

   a. Uncoil the permanently attached power cord and run it through the slot of the storage door.

   b. Close the storage door and re-lock both latches.

POWER CORD

STORAGE DOOR
STORAGE-DOOR LATCHES
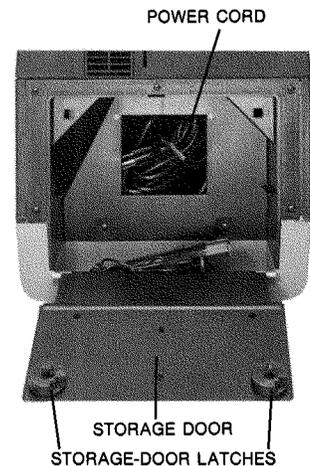
3. **Plug the AudioViewer/Projector into a grounded 120 V, 60 Hz power outlet.**

1
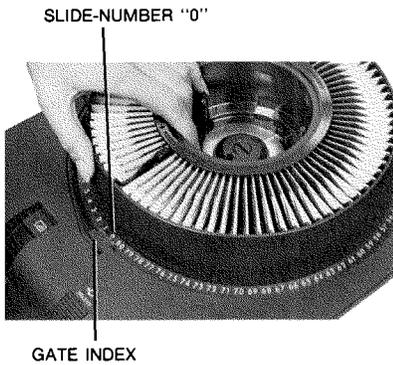
GATE INDEX

a. Place the tray of slides on the AudioViewer/Projector with slide number "0" at the gate index. (If the tray does not seat properly on the AudioViewer/ Projector, remove the tray and rotate the bottom metal plate of the tray until the metal plate locks into the "0" position.)

b. Replace the tray on the Audio-Viewer/Projector.

4. Turn on the AudioViewer/ Projector by moving the power button to the ON position.

a. The projection lamp will turn on.

b. The motor and fan will also start but the built-in viewing screen (or built-in front-projection lens) will remain dark because the dark-screen shutter opens to allow the light beam to project only when a slide is in the gate.

Using the Built-In Viewing Screen

5. Set the projection-lamp switch (HI/ LO/EXT) to the low (LO) position.

a. Low (LO) is normally used for projecting images onto the built-in viewing screen.

b. High (HI) is normally used for a brighter image when projecting onto an external front screen (using the built-in front-projection lens). Using high with the built-in viewing screen will not damage the AudioViewer/Projector, the built-in screen, nor the slides.

c. The function of the external position of the lamp switch (EXT) is discussed on page 4, under the heading, "Projection-lamp switch (HI/LO/ EXT)," and also under "External- projector interconnect outlet."

6. Press the slide-forward button to advance the tray to a slide. An image will appear on the screen.

Focusing the Image

7. Focus the image.

a. Model 570AF: Move the AUTOFOCUS ON/OFF SWITCH to the ON position. If possible, focus on an open-frame cardboard-mounted slide, rather than on a glass-mounted slide; the autofocus mechanism will then focus automatically on each slide type, even when intermixing cardboard, plastic, and metal mounts (with the exception of glass-mounted black-and white slides).

b. Models 220, 270, and 470: Manual focusing is normally needed only once at the beginning of the slide program if all slide mounts are the same type. If cardboard and glass-mounted slides are intermixed, however, refocusing for each mount type may be necessary.

Using the Image-Magnifying System

8. To magnify the image for close-up study, press in and lower the image-magnifying lever.

a. The center portion of a 24 x 36 mm transparency is magnified about 50 percent to fill the built-in viewing screen.

b. Refocus the image. (The image magnifier also works when projecting onto an external front-projection screen.)
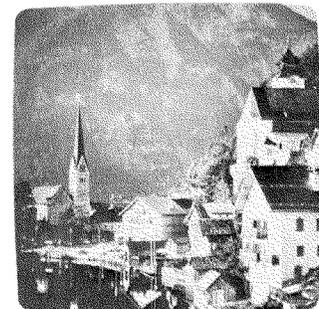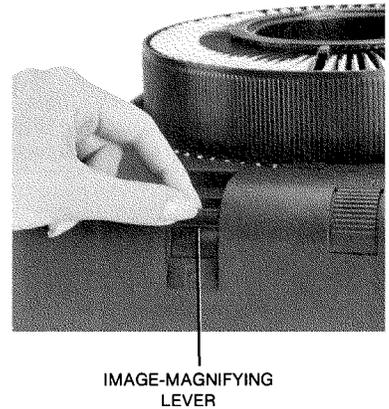
IMAGE-MAGNIFYING LEVER

IMAGE IN MAGNIFIED MODE

Using an External Front-Projection Screen

NOTE: For optimum image brightness and quality, the suggested distance between the external front-projection screen and AudioViewer/Projector is 3 to 12 feet (0.91 metre to 3.7 metres).

9. **To project onto an external screen:**

   a. Place the projection-lamp switch at high (HI) and move the front-projection door to the right. This will expose the permanently installed 77 mm *f*/3.5 front-projection lens.

   b. Refocus the image on the external screen.
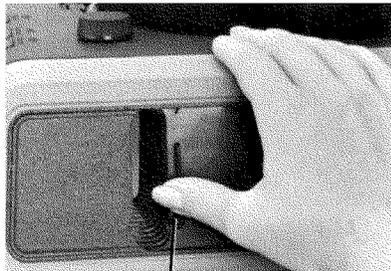
FRONT-PROJECTION DOOR
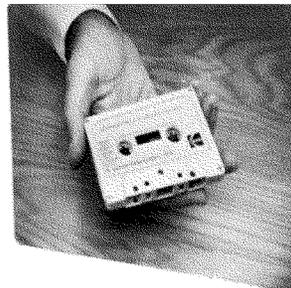
Suggested front-projection distance is 3-12 feet.

Raising and Leveling the Image

10. **To raise and level the image**

    a. Press and hold down both independently adjustable elevation latches.

    b. Raise and adjust the front of the AudioViewer/Projector to the desired angle.
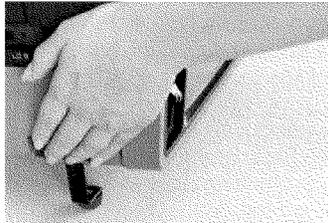
    c. Release the latches.

11. **Reverse the tray to the beginning of the program.**

    Press the slide-reverse button until slide-number "0" is at the gate index.

Using the Built-In Cassette Machine

12. **Press the tape stop/eject button (STOP/EJECT) to open the cassette well.**

    IMPORTANT: Unlike most cassette machines, the AudioViewer/Projector requires the cassette to be oriented so that

    a. The full reel of rewound tape on the supply reel is located on the *bottom—not at the top.* (The empty takeup reel is located on top.)

    b. The open-tape side of the cassette faces forward (toward you).

    c. Side A of the tape faces *away* from the machine.

SIDE A

OPEN-TAPE SIDE

CASSETTE WINDOW

FULL REEL OF REWOUND TAPE
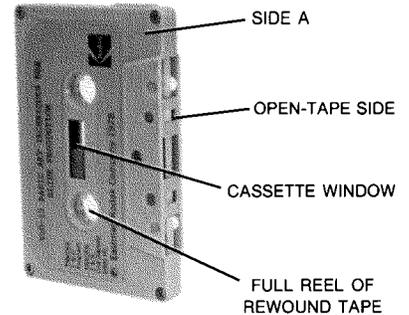
13. **Insert the Cassette into the Cassette Well.**

    a. Orient the cassette as described above and gently press the cassette into the cassette well; then close the cassette-well cover.

    b. Press the tape-play button. The tape will start playing.

    c. Adjust volume and tone.

    d. Refocus if necessary.
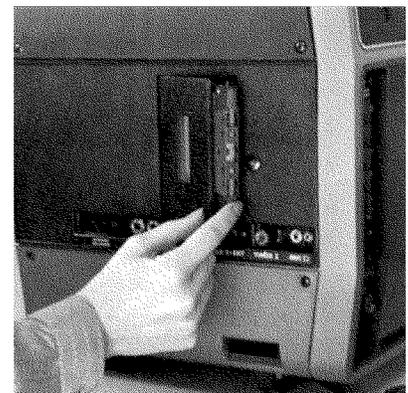
OPERATING CONTROLS

Slide Controls

Slide-focus knob: Turn this knob in either direction to focus images.

With the Model 570AF, place the autofocus on/off switch at the ON position and focus the first image only. Subsequent images will remain in focus, even when using mixed types of mounts, providing the autofocus ON/OFF switch is kept on.

Autofocus on/off switch: This switch (Model 570AF only) must be set at ON for the autofocus mechanism to operate.

Slide-forward button: Press and release this button once to advance the tray to the next slide. Hold it down to advance the tray rapidly.

Pressing this button while the AudioViewer/Projector is in the recording mode (Models 270, 470, and 570AF) advances the tray *and* records a 1000 Hz slide-advance pulse on the projector-control track of the tape. (See page 15 for information on the tape-track configuration of the Audio-Viewer/Projector, under the heading "Magnetic Cassette Tapes."

Slide-reverse button: Press and release this button once to reverse the tray to the preceding slide. Hold it down to reverse the tray rapidly.

> **NOTE:** The slide-forward and slide-reverse buttons can be used during program playback to resynchronize the images with the audio track, if necessary.

Power switch: Moving this switch to the ON position provides power to the entire AudioViewer/Projector.

Slide-select button: When this button is held down (with power on), the tray can be rotated by hand in either direction to any slide for projection or for editing, or to slide-number "0" for tray removal.

Projection-lamp switch (HI/LO/EXT): As noted previously, High (HI) produces a brighter image and is normally used when projecting slides onto an external screen with the built-in front-projection lens.

The low position of this switch (LO) is normally used when viewing images on the built-in viewing screen (front-projection door closed).

The external position (EXT) turns off the projection lamp in the Audio-Viewer/Projector and routes manual, recorded, or timer-generated (Model 570AF only) slide-advance pulses to an external slide projector (or dis-

solve control and two slide projectors) linked to the external-projector interconnect outlet with an accessory *KODAK* AudioViewer EC Interconnect Cord.

Image-magnifying lever: When this lever is lowered to its bottom position, the center portion of a 24 x 36 mm transparency is magnified by about 50 percent so the center portion of the image fills the screen and small details in the center of the slide can be seen more easily.

The normal (unmagnifying) position of the image-magnifying lever is up.

Images can be magnified while using the built-in viewing screen or while projecting images onto an external screen using the built-in front-projection lens. (Refer to page 9, under the heading "How to Avoid Image Cropping" for important information on transparency formats and the usable picture area.)

Variable electronic timer: The variable electronic timer (Model 570AF only) provides continuously variable automatic slide advance pulses from approximately 2 seconds at the fast end (1) to 24 seconds at the slow end (9). The slide tray on the Audio-Viewer/ Projector (or on an external slide projector or dissolve control connected to the external-projector interconnect outlet) will cycle automatically at any chosen interval from 2 to 24 seconds.

When using the variable electronic timer to advance an external slide projector or dissolve control (connected to the external-projector interconnect outlet with an AudioViewer EC Interconnect Cord), set the Audio-Viewer/Projector projection lamp switch at the external (EXT) position.

Move the variable electronic timer control to off to resume manual or taped slide advance.

Quick-locking elevation legs: As noted previously, you can adjust the AudioViewer/Projector for proper image height *and* leveling by pressing down on both independently-adjustable latches while raising or lowering the AudioViewer/Projector to the desired angle. When the image is in the required position, release both latches. The elevation legs will lock in position.

Slide Control Outlets and Jacks

External-projector interconnect outlet: This outlet accepts the plug of a *KODAK* AudioViewer EC Interconnect Cord (an accessory item described on page 18). When the 3-posi-

tion lamp-control switch is set at the external position (EXT), the Audio-Viewer EC Interconnect Cord provides a path for manual, recorded, or timer-generated (Model 570AF only) slide-advance pulses from the Audio-Viewer/Projector to an external slide projector (or dissolve control and two slide projectors).

To use the external-projector interconnect outlet, the following equipment is needed: a *KODAK EKTAGRAPHIC* AudioViewer/Projector, Model 220, 270, 470, or 570AF; a *KODAK* AudioViewer EC Interconnect Cord; a slide projector (such as a *KODAK EKTAGRAPHIC* III E Projector) or a dissolve control and two slide projectors (such as a *KODAK EKTAGRAPHIC* Programmable Dissolve Control, Model 2, and two *KODAK EKTAGRAPHIC* III E Projectors.) You will also need a suitable sound-slide program (an AV cassette tape recorded with narration and 1000 Hz slide-advance signals) and a tray of slides.

Using a Single External Slide Projector with the External-Projector Interconnect Outlet

> **NOTE:** Refer to the "User's Operating Instructions" packed with your slide projector for details on projector operation.

1. Connect the 2-pin plug of the *KODAK* AudioViewer EC Interconnect Cord (accessory item) into the external projector (EXTERNAL PROJECTOR) jack on the side panel of the AudioViewer/ Projector.

2. Then insert the 5-pin plug of the AudioViewer EC Interconnect Cord into the remote-control receptacle of the external slide projector.

3. Set the projection-lamp switch of the AudioViewer/Projector at the external position (EXT). If the projection-lamp switch is set at HI or LO, the slide-advance mechanism of the AudioViewer/Projector will advance instead of the external slide projector.

4. Turn on the lamp of the external slide projector and install the tray

4

on the external slide projector. Align and focus the image. Then reset the tray at the beginning of the program.

5. Play the program-cassette tape in the AudioViewer/Projector. As the cassette tape plays, the external slide projector will advance in synchronization with the 1000 Hz slide-advance pulses recorded on the control track of the program cassette tape.

Using a *KODAK EKTAGRAPHIC* Programmable Dissolve Control (and two Slide Projectors) with the External-Projector Interconnect Outlet

NOTE: Refer to the "User's Operating Instructions" packed with your Programmable Dissolve Control for details on dissolve control operation.
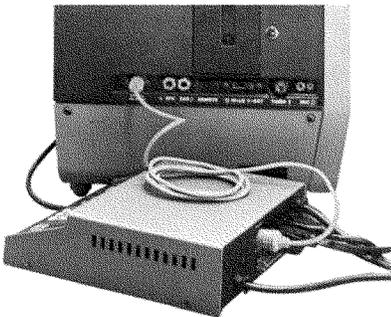
To advance two slide projectors in the dissolve mode, connect the accessory AudioViewer EC Interconnect Cord to the REMOTE receptacle located on the *back panel* of the *KODAK EKTAGRAPHIC* Programmable Dissolve Control, Model 2. The Programmable Dissolve Control will advance at a 1-second rate each time it receives a slide-advance pulse from the AudioViewer/Projector.

Be sure to connect and operate the equipment *before* a scheduled showing. A thorough rehearsal is good audiovisual practice.

Remote tape-control jack: This jack (provided on Models 270, 470, and 570AF), accepts the smaller of the two microphone plugs supplied on the AudioViewer/Projector. This jack also accepts the plug of a *KODAK* AudioViewer Tape Deck Remote Control (an accessory item described on page 18).

Cassette-Tape Controls and Visual Indicators

Tape-recording button: To put the AudioViewer/Projector into the recording mode (using Model 270, 470,

or 570AF), simultaneously press this button (RECORD) and the tape play button (PLAY).

For details on recording a sound-slide program, refer to page 9, "Recording the Program on the Tape."

Tape-forward button: This button (FORWARD) advances the tape rapidly onto the top take-up reel of the cassette.

Tape-rewind button: Press this button (REWIND) to rewind the tape rapidly onto the bottom supply reel of the cassette.

Tape-play button: Press PLAY to play the tape. The normal playing speed is the same as for most cassette machines intended for home use— 1 7/8 inches per second. When this button is pressed simultaneously with the record button, recording models of the AudioViewer/Projector (Models 270, 470, and 570AF) are put into the recording mode.

Tape stop/eject button: With any tape-control button depressed, pressing this button *once* stops the built-in tape machine. Pressing it *twice* unlatches the cassette-well cover so the cassette can be inserted or removed. (With no tape-control buttons depressed, the first actuation of the tape stop/eject button unlatches the cassette-well cover.)

Tape pause/restart button: Pressing this button (PAUSE/RESTART) in the recording mode (Models 470 and 570AF only) records a 150 Hz program-pause (tape-stop) signal on the tape. (The tape does not stop as the signal is being recorded, however.)

Tapes stopped in the playback mode by recorded program-pause signals (using Models 470 and 570AF) can also be restarted with this button.

This button can also be used during tape playback to stop and restart the tape at *any* point in the program.

Models 220 and 270 will ignore (run by) recorded 150 Hz tape-stop signals because these AudioViewer/Projectors are not provided with pause/restart circuitry. However, you can stop the tape manually. To stop and restart the tape at the points in the program indicated in the script, simply press the tape stop/eject button to stop the tape; press the tape play button (PLAY) to restart the tape when desired.

The cassette tape deck in the Model 270 can also be stopped and restarted with a *KODAK* AudioViewer Tape Deck Remote Control. See page 18 for a description of this accessory item.)

Tape pause/restart light (Models 470 and 570AF): This light brightens when:

• The tape is stopped by a recorded 150 Hz program-pause signal, during program playback.

• The tape pause/restart button is pressed to stop the tape in the playback mode.

• The tape deck motor switch (located on the handle of the microphone supplied with Models 270, 470, and 570AF) is moved to the OFF position, or the tape deck motor switch on the accessory AudioViewer Tape Deck Remote Control is placed at the OFF position. The tape pause/restart light goes off when the tape is restarted.

Tone: This control decreases high-frequency (treble) response as it is moved down from the top position. Adjust it for best sound. It is inoperative during recording.

Volume control: Moving this control up increases sound level during program playback. Moving the control down decreases volume.

This control does not affect recording level.

Signal-recording light: This green light (on Models 270, 470, and 570AF) stays on (brightens) when the AudioViewer/Projector is being used to record 1000 Hz slide-advance pulses and 150 Hz program-pause signals. (Recording of slide-advance pulses and program-pause signals is normally accomplished when the AudioViewer/Projector is in the recording mode *with the microphone disconnected.* Refer to page 10, "How to Record the Slide-Advance Pulses," and "How to Record the Program-Pause Signals."

Any previous slide-advance pulses or program-pause signals recorded on the control tracks of the program cassette tape will be erased if the tape is running while the signal-recording light is on.

Audio-recording light: This red light (on Models 270, 470, and 570AF) "flickers" when sound is being recorded with the microphone.

Sound already recorded on the tape will be erased if the tape is running while the audio-recording light is on. (For details on recording audio, refer to "Recording the Program on the Tape" on page 9.)

Cassette Tape Outlets, Jacks, and Microphone

Remote-control outlet: This outlet on Models 220 and 270 accepts the

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plug of a *KODAK* AudioViewer/Projector Remote Control 210/260.

The remote-control outlet on Model 470 and Model 570AF accepts the plug of the *KODAK* AudioViewer/Projector Remote Control 410/460. (The functions of these accessory items are described on page 18.)

Headphone outlet (EAR): Headphones with a 1/4-inch plug (or adapter) can be used. (Audio is reproduced monaurally.) Medium- to high-impedance headphones (150-2000 ohms) are recommended. The internal loudspeaker and the external loudspeaker jack are bypassed when the headphone outlet is used. When using headphones, adjust tone and volume level as desired.

Microphone jack: This jack (on Models 270, 470, and 570AF) accepts the plug of the handheld microphone supplied with the AudioViewer/Projector.

The small remote tape-control jack (located next to the microphone jack on Models 270, 470, and 570AF) also accepts the plug of a *KODAK* AudioViewer Tape Deck Remote Control (an accessory item described on page 18) for manual remote control of tape stop/ start during recording and playback.

External-loudspeaker outlet (SPK): An external loudspeaker having a nominal impedance of 8 to 16 ohms can be connected to this outlet with a 1/4-inch phone plug.

An external loudspeaker should be considered when the audience is large enough to require the connection of an external slide projector (or dissolve control and two slide projectors) to the external-projector interconnect outlet for projection on an external screen.

The internal omnidirectional loudspeaker is automatically disconnected when an external loudspeaker is connected to the external-loudspeaker outlet.

> **CAUTION: Do not connect headphones to the external-loudspeaker outlet!**

Omnidirectional handheld microphone: This microphone (provided with Models 270, 470, and 570AF) is used for recording narration and sound effects. (For more details about recording audio, refer to "Recording the Program on the Tape," on page 9.)

The tape deck motor switch located on the handle of the microphone allows stopping and restarting the tape during recording and playback.

OTHER WAYS TO SHOW SLIDES

1. **Editing Without a Lock Ring on the Tray:** Remove the lock ring from the tray. Place the tray on the AudioViewer/Projector and press the slide-forward button or slide-reverse button to raise the slide for easy removal. Replace the lock ring before removing the tray.

2. **Projecting Without a Tray:** Simply insert a slide into the gate (with the image correctly-reading from left to right and then turned upside down). To remove the slide, press the slide-select button (SELECT).
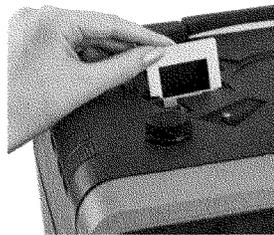
3. **Random Display:** Holding the slide-select button down (with power on) allows the tray to be manually rotated to any slide for viewing.

4. **With a *KODAK* EC Stack Loader:** Up to 40 2 x 2-inch (50 x 50 mm) cardboard or thin-plastic mounted slides can be shown without a tray.

TAPE DECK MOTOR SWITCH
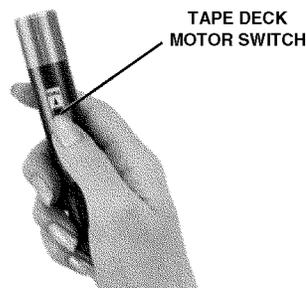
SHUTDOWN

1. At the end of the program, press the stop/eject button to stop the tape; press the rewind button to rewind it. When the rewind button snaps back out after rewinding, press the stop/eject button to open the cassette well.

2. Remove the cassette, close the cassette well door, and place the cassette in its protective plastic case.

3. Close the front-projection door; move the image-magnifying lever to the normal (up) position and set the projection-lamp switch to low.

4. With power on, hold down the slide-select button and manually rotate the tray so that slide number "0" is at the gate index. Release the slide-select button and remove the tray.

5. Turn the AudioViewer/Projector off. If it is to be moved, press the elevation latches and lower the machine to retract the elevation legs. Then unplug the power cord.

6. Open the rear-storage door and coil the power cord into it.

7. To store the tray in the AudioViewer/Projector, orient the bottom metal plate of the tray away from the machine and insert the tray into the storage compartment. (It will not go in backwards.)

8. Close the storage door and relock both latches.

9. Finally, protect the built-in screen from damage with a suitable cover.

PREPARING NEW SOUND-SLIDE PROGRAMS

(Models 270, 470, and 570AF)

Writing the Outline, Writing the Script, and Planning the Visuals

The following information applies only to recording models of the AudioViewer/Projector: Models 270, 470, and 570AF.

Preparing a new sound-slide program with the *KODAK EKTAGRAPHIC* AudioViewer/Projector is challenging—and fun! If you've never done much writing before, the prospect of turning out an entire script may make you nervous. If so, relax. Writing is easier if you tackle he job in stages and allow enough time.

We suggest novice producers write the narration first, before they consider the visuals to illustrate it.

Gathering and Organizing Your Ideas

Hold a brainstorming session and write down as many ideas for your script as you can think of. Use a 3 x 5-inch card for each idea. Review all of the cards and determine five or six major subject headings that cover all your ideas.

Writing the Outline

Next, organize the cards under the major headings and discard redundant cards. Add new ones as you think of new ideas. Now put the cards in order. This will give you a good start on the first draft of the outline. Number the cards so they can be easily rearranged in correct order if they are dropped. Writing the outline should be easy if you follow the order of the cards. Leave five or six blank lines between each major heading (to be filled in later with more detailed information).

When you're satisfied with the outline, you may want to give your supervisor, co-workers, or sponsors a copy to make sure that they agree with the creative approach and the content that you plan to cover.

On-the-Job-Safety

Visual	Narration
1. Watch It! CHARCOAL FIRE	MUSIC FADES UNDER AS NARRATION BEGINS
2. Person with charcoal grill.	It was a hot Sunday afternoon and we decided to barbecue some steaks.
3. Two people talking.	My son was in a rush to go out on a date and asked me to start the fire.
4. CU—Hands/electric fire starter.	I plugged in the electric fire starter and slipped it under the charcoal.
5. CU—Charcoal/starter.	Usually we wait 15 to 20 minutes for the fire to start.
6. Two people dressed in shorts.	My neighbor came over and we started talking—it was a hot day; perfect for bermuda shorts and no shoes or socks.
7. CU—Son at door.	Then my son came to the door, asked how the fire was coming, and said that he was in a hurry and had to get going. I told him to shower and the fire would be ready.
8. LS—Father at charcoal.	But when I looked, the charcoal didn't seem to be lit.
9. CU—Father picking up.	. . . so I decided to hurry things up a bit. I got the gasoline can out and . . . I have to admit this was a real dumb thing to do.
10. CU—Pouring gas on.	I've preached to my kids . . . never put gasoline on a fire—but of course, I wasn't thinking, just hurrying, and holy mackerel . . .
11. MS—Gas explosion in grill.	Phoom! The whole thing exploded. There was fire under the charcoal after all. It shook me up so badly that I just threw the gas can and . . .
12. LS—Burning gas can and bushes.	. . . hit a nearby evergreen, setting it on fire. Then the flames headed toward my garage.
13. LS—Man extinguishing fire.	My neighbor came over and beat the flames with some burlap while I ran for the hose.
14. LS—Foot kicking gas can.	The can was kicked into the driveway where it started.

Writing the Script

Now add as much relevant detail as you can in the space under each heading and then turn the points you've listed into sentences. If you have trouble finding the right words, ask yourself, what am I *really* trying to say? When you can answer that question in a simple sentence, write it down.

When you've finished the first draft, put it away for a few days. When you pick it up again, you may be surprised by how little effort is needed to complete it.

Remember that the audience watching your slide show will not be able to see your paragraphs and punctuation. *You have to write for their ears.* Use short, easily-understood sentences. Avoid unusual words, technical terms, and jargon. Remember: clarity comes from *little* words.

When you're satisfied with your script, record a "test tape" of the script with the AudioViewer/Projector and play it back to hear how it sounds. This serves as a double check. If you can read the narration aloud with no difficulty, you or the narrator you choose should be able to read it easily too. If the people you ask to listen to the tape understand it, chances are your audience will understand the final production tape as well.

Planning the Visuals

Now develop the visual side of the script the same way you developed the narration. Read through the script (and listen to the "test tape" you made). Make a list of all the images that might work with the script. Then go back over the list and eliminate images that aren't technically feasible or that would be too troublesome to shoot (because of distant or difficult locations).

Type up the script with the commentary on the right side of the page and the descriptions of the visuals on the left (as shown on page 7, in "On the Job Safety.") It's easier to type this way. If you double or triple-space, you'll have room for the revisions you may want to make later as you edit the slides. When planning your slides, be sure that no image remains on the screen for too long.

Also remember that you have the option of recording a program-pause signal at any point in the program (with Model 470 and Model 570AF) for automatic tape stop. When the tape automatically stops in response to the recorded 150 Hz program-pause signal, you can ask questions of the audience, use the image-magnifying feature to spotlight details in the center portion of the slide, and then resume the program when appropriate.
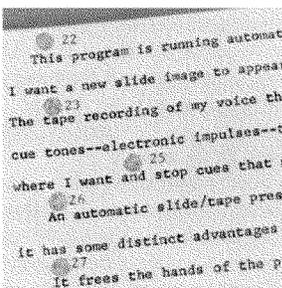
Indicating Slide-Advance Pulses in the Script

Note that the slide changes are indicated by the start of each new paragraph and that the images are numbered consecutively.

If your script does not contain descriptions of the visuals, you can still indicate where each slide change is located in the program by inserting a round dot (with a felt-tip pen) above the words in the script that are spoken as the image changes. Then number the dots consecutively.

Placement of Program-Pause Signals in the Script

To show where program-pause signals are needed in the script (using Models 470 and 570AF only), simply print TAPE STOP (preferably in red ink).

Be sure to allow two seconds of silence (unrecorded tape) *before and after* each program-pause signal to prevent tape slowdown and start-up distortion of the recorded audio.

Editing, Arranging the Slides, and Loading the Tray

1. Place your slides so that all images and words are right-side up, reading correctly from left to right, and in correct projection sequence (in the order that you want them to appear in the show).

2. Review your slides. Is each slide properly exposed, composed, and focused? Are all important elements in each slide legible? Is the meaning of each slide readily apparent? Do the images fit together visually and make logical sense? Now is the best time to delete or replace ineffective slides.

3. Rotate the remaining slides upside down (so that all images are upside down). Number each slide mount consecutively in the upper right-hand corner. (Do not use sticky labels on the mounts. Projector heat will loosen them, causing the slides to jam in the gate. Use a *permanent ink* felt-tip marker instead.)
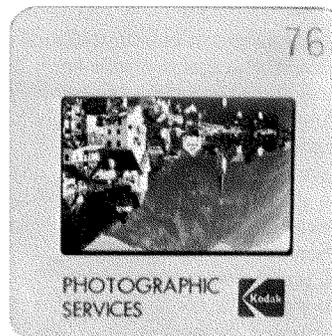
4. Remove the lock ring or cover of the tray by turning it counterclockwise.
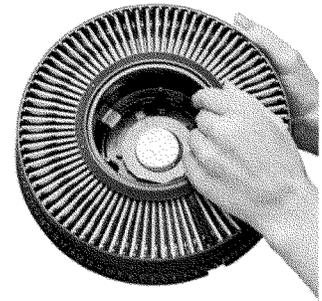
5. Be sure the bottom metal slide retainer plate of the tray is locked in the zero position. (Turn the bottom metal plate of the tray until it locks tightly.)

6. Insert the first slide into slot number 1, the second slide into slot number 2, etc. Remember: the correct slide orientation for the AudioViewer/Projector is with the image upside down and the correct-reading side of the transparency facing toward the next-higher number in the tray.

7. Insert the slides into the tray in exactly the same order and orientation as you arranged them (with the images *upside down*).

8. Hold the full tray right-side up in front of you. The mount numbers on the slide mounts should be positioned next to the outside circumference of the tray and visible as the tray is rotated.

9. Replace the lock ring or cover of the tray.

10. Place the tray on the AudioViewer/Projector and advance through the slides while checking them for correct order and image orientation on the screen.

11. Reset the tray to the beginning of the program (so that slide-number "0" is at the gate index).

PHOTOGRAPHIC SERVICES

8

How to Avoid Image Cropping

As you plan your slides, keep in mind that the more familiar you are with the imaging requirements of the *EKTAGRAPHIC* AudioViewer/Projector (as with any slide-display device having a built-in screen), the better you can prepare 2 x 2-inch (135-format) slides that effectively communicate your message. Image legibility and cropping are of prime importance with these communication devices.

Generally, you can use all of the transparency area of a 126-size slide. Horizontal and vertical 135-size slides and 127-size super slides are cropped somewhat by these display devices. About 3/64-inch (1.2 mm) of the long dimension (width) of a 135-size slide is trimmed off each edge by the built-in screen. However, the narrow dimension (height) of the slide will be visible.

Super slides lose about 1/4 inch (6.4 mm) of image height and width (3.2 mm at each edge) when projected on the built-in screen of these machines. (It's necessary to crop some area from the larger formats so that images from the smaller formats will not be too small for viewing.)

If you wish to fill the built-in screen of the AudioViewer/Projector completely, one method is to use slides with a 30.8 mm square aperture. Slides with apertures of this size are made by Kodak processing laboratories when *KODACHROME* duplicates are ordered from superslides or from square transparencies made on 120- or 620-size film.

When projecting onto an external front screen (using the built-in front-projection lens), the full picture area of all transparency formats (with the exception of 38 x 38 mm super slides that are vignetted when used with the short focal-length lens) will be projected without image cropping.
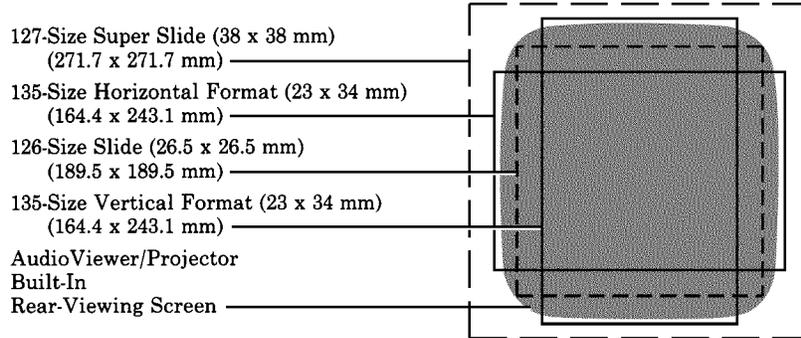
We recommend that you shoot or select slides that have the same-size aperture and same image orientation (all horizontal or all vertical formats).

All slides used with the AudioViewer/Projector are automatically registered horizontally and vertically in both front- and rear-screen modes of projection.

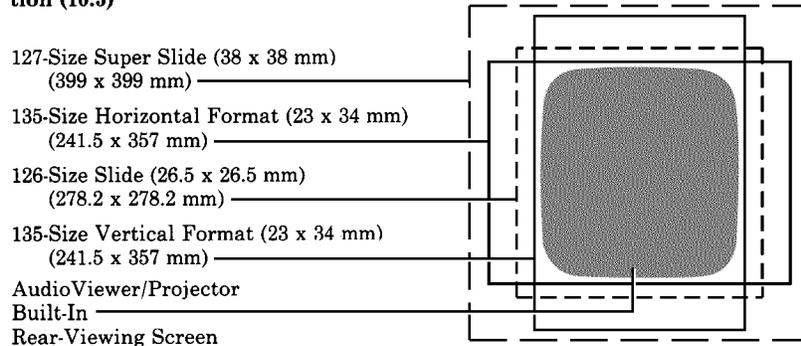### Slide Formats as Displayed on the Built-In Screen of the AudioViewer/Projector

AudioViewer/Projector in the Normal Mode of Projection (Unmagnified Images)

Standard 2 x 2-inch (50 x 50 mm) Slide Formats as Viewed on the Screen of the AudioViewer/Projector in the Normal (Unmagnified) Mode and with Nominal Magnification (7.15)

127-Size Super Slide (38 x 38 mm)
(271.7 x 271.7 mm)

135-Size Horizontal Format (23 x 34 mm)
(164.4 x 243.1 mm)

126-Size Slide (26.5 x 26.5 mm)
(189.5 x 189.5 mm)

135-Size Vertical Format (23 x 34 mm)
(164.4 x 243.1 mm)

AudioViewer/Projector
Built-In
Rear-Viewing Screen

AudioViewer/Projector in the Magnified Mode

Standard 2 x 2-Inch (50 x 50 mm) Slide Formats as Viewed on the Screen of the AudioViewer/Projector in the Magnified Mode with Nominal Magnification (10.5)

127-Size Super Slide (38 x 38 mm)
(399 x 399 mm)

135-Size Horizontal Format (23 x 34 mm)
(241.5 x 357 mm)

126-Size Slide (26.5 x 26.5 mm)
(278.2 x 278.2 mm)

135-Size Vertical Format (23 x 34 mm)
(241.5 x 357 mm)

AudioViewer/Projector
Built-In
Rear-Viewing Screen

Practicing the Program (Before Recording It)

While reading the script, practice pressing the slide-forward button (on the AudioViewer/Projector or on the optional *KODAK* AudioViewer/Projector Remote Control 210/260 or AudioViewer/ Projector Remote Control 410/460) to record the slide-advance pulses (and to advance the tray simultaneously). You may need to press the slide-advance button a second or so "ahead of schedule" so that the images appear on the screen exactly when they are supposed to. (Slide-cycling time for the AudioViewer/Projector is about the same as for most *KODAK EKTAGRAPHIC* III and *EKTAGRAPHIC* Slide Projectors—about 1 second.)

Recording the Program on the Tape

Although recording the audio track and signal track of the program cassette tape at one time (in the same recording "pass" of the tape) is possible, it is not recommended. We recommend that you record the program cassette tape in the following order:

1. Record the audio with the microphone.

2. Rewind the program tape to the beginning. *Disconnect the microphone*. Place the tray of slides on the AudioViewer/Projector.

3. Record the slide-advance pulses (and program-pause signals with models 470 and 570AF) while listening to the audio, reading the script, and pressing the slide-advance button (and pause/restart button) as required.

Recording the Audio

1. **Turn power on and insert a blank cassette.**

   a. Play the program tape for about 8 to 10 seconds to get past the unrecordable tape leader. Then stop the tape with the tape stop/eject button.

   b. Insert the plugs of the microphone into the microphone jack and the remote tape-control jack. The plugs will go in only one way.
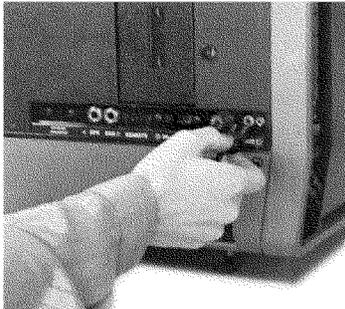
   c. Move the tape-deck-motor switch located on the handle of the microphone to the OFF position so the tape doesn't start prematurely when you are ready to begin recording.
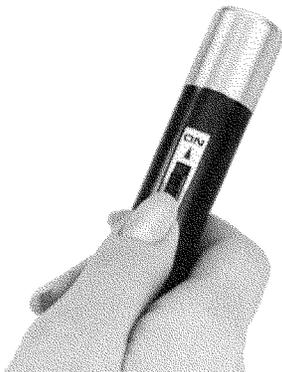

   The tape-deck motor switch prevents the tape from running when the switch is at the OFF position.

10

2. **Record the script.**

   NOTE: Record in a room in which you will not be disturbed!

   Put a sign on the door to make sure you won't be interrupted during the recording session. Disconnect the telephone and close the windows. (The Audio-Viewer/Projector microphone will pick up most noises in the environment.) Also try to record the entire script in one session so the recording sounds consistent.

   a. To put the AudioViewer/Projector in the recording mode, press the tape play and tape record buttons simultaneously. (The tape will start recording when you move the switch on the microphone handle back to the ON position.)
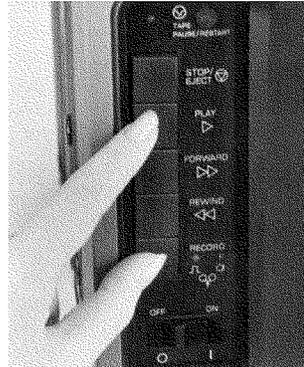
   b. When you are ready to record, move the switch on the microphone back to ON, pause briefly to let the tape reach proper speed, and then narrate the script into the microphone in a normal speaking voice.

   c. The red audio recording light will flicker, indicating that your voice is being recorded. The built-in AGC (automatic gain control) will keep the recording level at an acceptable level.

   For Models 470 and 570AF:

   Recording a 150 Hz program-pause signal immediately before the beginning of the program so the tape always conveniently stops at the beginning of the program in the playback mode will be helpful to you and other program presenters. To do this:

   1. Put the machine into the recording mode by pressing the tape play and tape record buttons simultaneously.

   2. Let the tape run for several seconds from the beginning.

   3. Press the tape pause/restart button for about 1/2 second to record the program-pause signal.

   4. Allow the tape to play for two more seconds and then stop it by moving the switch on the handle of the microphone to the OFF position. You can then start recording the script.

Evaluating the Soundtrack and Correcting Any Errors

Rewind and listen to the tape. Is the sound level adequate—and consistent? Are there distracting background noises? Is each word clearly enunciated and correctly pronounced? Does the narration sound like it was patched together from several recording sessions or does it flow smoothly at the same playback level from beginning to end? If you discover errors in your recording or if you wish to make changes to it, *change the script first.* Then:

1. Play the tape to any pause in sound *before* the required recording change.

2. Record the new section, making sure to avoid erasing good audio.

3. Stop, rewind, and listen to the corrected section.

How to Record the Slide-Advance Pulses

   IMPORTANT: To prevent erasing the audio from the tape while the AudioViewer/Projector is being used to record slide-advance pulses (and program-pause signals with Model 470 and Model 570AF), disconnect the microphone.

   When the microphone is disconnected, slide-advance pulses and program-pause signals can be erased and

recorded *without* erasing your valuable soundtrack. When the microphone *is* connected, *both* tape tracks (audio on tracks 1 and 2, and slide-advance pulses and program-pause signals on tracks 3 and 4) can be erased and recorded.

1. Install the tray at "0."

2. Play the tape past the initial program-pause signal (Models 470 and 570AF only).

3. Then stop the tape.

4. Put the machine into the recording mode *with the microphone disconnected.*
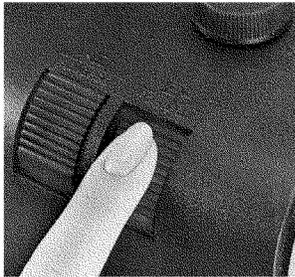
5. As the tape plays, read the script and press the slide-forward button (FORWARD) for about 1/2 second at the points indicated in the script. The tray will advance one slide as each signal is recorded. Reassuring "beeps" will be made audible when recording slide-advance pulses if the volume control is raised slightly during recording. (You won't hear the "beeps" during tape playback.)

How to Record the Program-Pause Signals (Models 470 and 570AF)

IMPORTANT: Do not record the program-pause signals separately from the slide-advance pulses. Record both types of signals during the same "pass" of the tape.

1. Press the tape pause/restart button (PAUSE/RESTART) where the words TAPE STOP appear in the typed script. (The tape pause/restart light will not turn on when the pause/restart button is pressed.)

2. The program tape actually stops in response to recorded program-pause signals only during tape playback.

Evaluating the Slide-Advance Pulses (and Program-Pause Signals); Correcting Any Errors

Are all slides on the screen long enough for viewers to see them and read any text? Are some on the screen longer than they need to be? Do some images appear on the screen too late (lag behind the narration)? Does the tape stop when it is supposed to? If the tape contains signal-recording errors, you can fix them *without erasing the audio.*

1. Correct the script first.

2. Make sure the microphone is still unplugged.

3. Play the tape to the pulses (and signals) that need correction.

4. Stop the tape.

5. Put the AudioViewer/Projector into the recording mode. (The audio will not be erased because the microphone is still disconnected.)

6. As the tape plays, read the script, listen to the recorded audio, watch the images on the screen, and record the new slide-advance pulses (and program-pause signals). (The tray will not advance, nor will the tape stop, in response to old pulses or signals because they are automatically erased as the tape is being recorded.)

7. Be sure to stop the tape, with the tape stop/eject button, before erasing good slide-advance pulses (or program-pause signals).

8. Rewind the tape and check the corrected section.

   NOTE: If the program is short, recording all of the slide-advance pulses (and program-pause signals) from the beginning may be easier and more effective.

Evaluating the Finished Program

You may need an outsider's viewpoint because after you've worked on an audiovisual production, you may not be able to judge it realistically. Choose someone who is willing and able to give you an honest opinion. Chances are you'll be dissatisfied with some of the sequences in the show, but remember that you may be overly critical of your own efforts. Perhaps all you need is one or two new slides to replace marginal ones.

Recording Narration and Background Music Simultaneously

Recording models of the Audio-Viewer/ Projector (Models 270, 470, and 570AF) can be used with the supplied microphone to record sound from the built-in loudspeaker of a radio, television, music playback system, or other electronic source. In this way, narration, background music, and sound effects can be recorded simultaneously with the narration.

If your show is intended for sympathetic audiences within your organization, you may not require a sound track with anything more than narration. However, you can often improve the quality, appeal, and effectiveness of your show by adding appropriate music as background.

The easiest way to do this is to play a tape containing the music over a *second* cassette recorder located near the microphone connected to the AudioViewer/Projector. By carefully changing the volume of the *external* tape recorder (i.e., the cassette machine playing the background music), an assistant can "fade up" or "fade down" the background music as needed as you record the script. Thorough rehearsal can produce an effective sound track on your program tape.

Audio also can be recorded electronically from an amplifier through the AudioViewer/Projector microphone input with a special attenuating connecting cord (available at radio supply stores) that reduces signal level to approximately microphone level.

A separate cassette recorder can also be used to record the audio for your show on your program tape; the slide-advance pulses (and program-pause signals, with models 470 and 570AF) can be added to the program tape later with the AudioViewer/ Projector.

   IMPORTANT: Remember that music and other copyrighted materials cannot be recorded without clearance from the owner of the copyright.

Preventing Accidental Erasures of Your Program Tapes

With a suitable tool, break out the plastic tabs from the edge of your valuable recorded cassettes so the tape cannot be accidentally erased and recorded. With the tabs removed from the edge of the cassette, the tape record button (RECORD) cannot be pressed in to put the AudioViewer/Projector into the recording mode.

To erase and record the tape again, cover the tab holes with pressure-sensitive (cellophane) tape; then you can record the cassette again.

Be sure to remove the cellophane tape after recording the new program.

TABS

CELLOPHANE TAPE
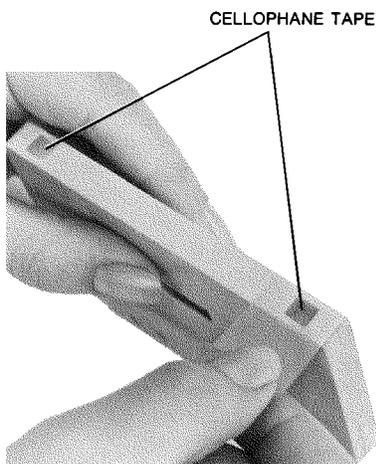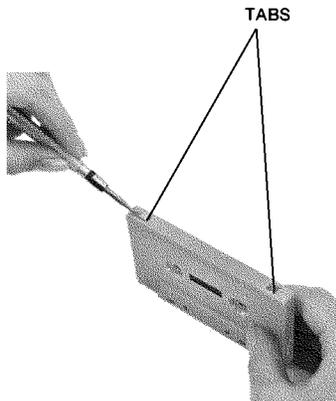
IN CASE OF DIFFICULTY

Slide Tray Jammed?

The AudioViewer/Projector is designed to stop to reduce the possibility of damage if a bent slide is caught (jammed) in the gate.

To reset the slide mechanism of the AudioViewer/Projector after a jam, follow these steps:

1. Stop the program cassette tape by pressing the stop/eject button.

2. Make a note of the number of the slide in the gate.

3. Turn the large coin-slotted tray-removal screw (located in the hub of the projector housing in the center of the tray) in either direction as far as it will go and then remove the tray. (The tray-removal screw does not come out.)
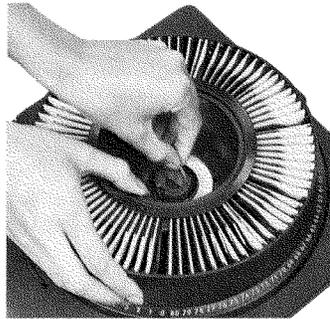
4. Be sure the lock ring on the tray is tight before inverting the tray.

5. Turn the slide tray upside down and rotate the bottom metal plate of the tray until it locks in the "0" position.

6. Press the slide-select button (SELECT) to lift the jammed slide out of the gate, and then remove the slide.

7. Press the slide-select button *a second time* to reset the slide mechanism.

   NOTE: In some cases it may be necessary to turn the AudioViewer/Projector power off and on before pressing the slide-select button to reset the slide mechanism.

8. Turn the tray upright and loosen and remove the lock ring of the tray.

9. Check the slide for damage, and replace it if necessary.

10. Replace the lock ring on the tray, replace the tray on the Audio-Viewer/Projector at the correct slide number, and resume the program.

## Projection Lamp Burned Out? (How to Change the Projection Lamp)

CAUTION: Unplug power cord from power outlet before changing the lamp! The lamp may still be hot! Wear protective gloves!

Replace the projection lamp if the screen remains dark (no image) when power is on, the projection-lamp switch is in the LO or HI position, and a slide is in the gate. To replace the projection lamp

1. Keep power on until the fan cools the lamp area; then switch the AudioViewer/Projector off.

2. Turn the screw on the lamp-access door counterclockwise and swing open the lamp door.

3. Pull back on the lamp lever to move the lamp up for removal.

4. Before inserting a new lamp, latch the lamp lever first.

5. Insert the new lamp and press it down against the socket to be sure it is tightly seated.

6. Wipe off any fingerprints from the lamp with a cloth moistened with rubbing alcohol. (Avoid touching the mirror on the lamp-access door.)

7. Close the door, retighten the screw, and plug the AudioViewer/Projector in.

8. Turn the AudioViewer/Projector on and advance the tray to a slide to see if the image is projected on the screen.
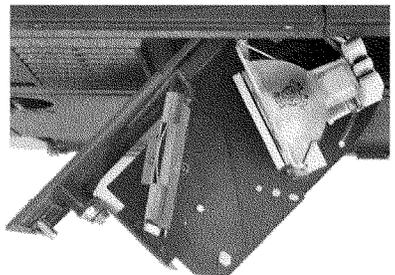
Tray Advance Unreliably?

Compact cassette slide-advance signals and program-pause signals conforming with spacing, frequency, duration, and level characteristics listed under "Specifications" on page 17 will operate the AudioViewer/Projector dependably. Signals not conforming to these specifications may result in undependable operation. For example, slide-advance signals of the correct frequency (1000 Hz) but of the wrong duration (other than 0.07 sec.) may result in erratic slide-tray advance. (Tapes made in conformance with ANSI Standard PH7.4-1975 will operate this machine dependably.)

Tapes recorded with earlier models of the *EKTAGRAPHIC* AudioViewer or *EKTAGRAPHIC* AudioViewer/ Projector will operate an *EKTAGRAPHIC* AudioViewer/ Projector, Models 220, 270, 470, or 570AF dependably, and vice versa.

OWNER'S MAINTENANCE

Cleaning the Built-In Tape Deck

If possible, clean the built-in tape deck after every program. Cleaning the tape deck takes only a few minutes and helps prevent buildup of oxide from tapes and loss of sound fidelity.

1. **Unplug the power cord!**
2. Press the tape stop/eject button to open the cassette well. Then partially close the cassette well door to position the heads of the tape deck for more convenient access for cleaning.
3. Press and hold in the tape play button to keep the tape heads forward.
4. Rub the capstan, tape-guide path, and metallic heads with a cotton swab moistened with head-cleaning solution or isopropyl alcohol.
5. *Do not touch the heads with any metallic object.* A head-cleaning cassette (available at radio-supply stores) can be used occasionally, but a swab dipped in isopropyl alcohol is preferred.

Clean the tape deck often to prevent buildup of oxide on the heads and loss of sound fidelity.
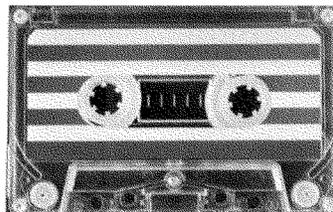
Head-Cleaning Cassette

Cleaning the Built-In Viewing Screen

Use a soft, damp cloth to clean the built-in viewing screen. Do not use lens-cleaning solutions or tissues containing silicone.

The optics and mirrors inside the AudioViewer/Projector should be cleaned only by a qualified technician, such as those at a Kodak Service Center (addresses on back cover). Partial disassembly of the Audio-Viewer/Projector is required for this service.

Adjusting the Position of the Image on the Built-In Viewing Screen

All *KODAK EKTAGRAPHIC* Audio-Viewer/Projectors have been designed to let the owner maintain, and make minor adjustments to, the machine as necessary.

The front mirrors have to be readjusted when the image on the built-in screen is not in perfect alignment. Adjustments are made with the screws located on the front-projection door. Be sure the image-magnifying lever is located in its "up" position, for normal (unmagnified) viewing of images; then close the front-projection door.

Vertical Image Alignment

1. Insert a slide into the gate of the AudioViewer/Projector.
2. Turn the lower left screw to center the image vertically. (The front-projection door may need to be opened slightly to reveal the screw.)
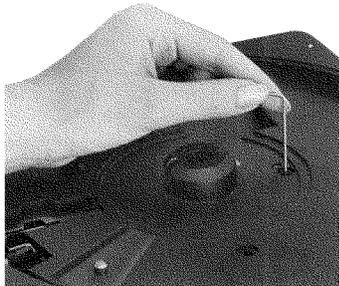

Horizontal Image Alignment

1. Insert a slide into the gate of the AudioViewer/Projector.
2. Turn the upper right screw on the front-projection door to center the image from side-to-side.

Adjustment of Lifter Height

The lifter returns the slide to the slide tray. If adjustment is necessary

1. Remove the slide tray.
2. Pry off the black plastic cap covering the screw.

3. A 0.050-inch Allen wrench is required to turn the screw. Turning it clockwise will cause the slide to be lifted higher. Adjust the lifter height so that the top of the slide comes close to, but does not touch, the bottom of the tray lock ring when pressing the slide-select button. (If the lifter is adjusted too high, you will hear a noise as the slides touch the ring. Readjust the lifter as necessary.)
4. Replace the plastic cap on the screw.

Aligning the Image-Magnifying System

1. Make a slide for image positioning as shown below.
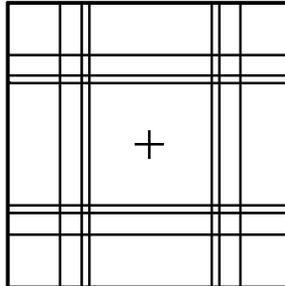
2. Tape a 2 x 2-inch slide transparency of poor quality (such as an overexposed one) squarely over the illustration.
3. Use a straight edge and pin to scratch the surface.
4. Place this slide in the gate of the AudioViewer/Projector.
5. Move the image-magnifying lever down to the image-magnifying position.
6. Remove the cap covering the screw.
7. A 3/32-inch Allen wrench is needed. Slowly turn the screw to align the central portion of the slide with the screen. (The tray cannot be on the AudioViewer/Projector for this adjustment.)
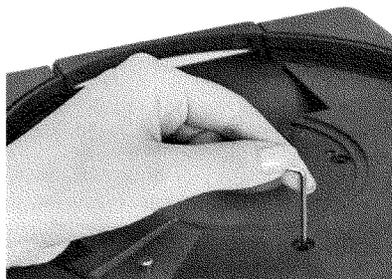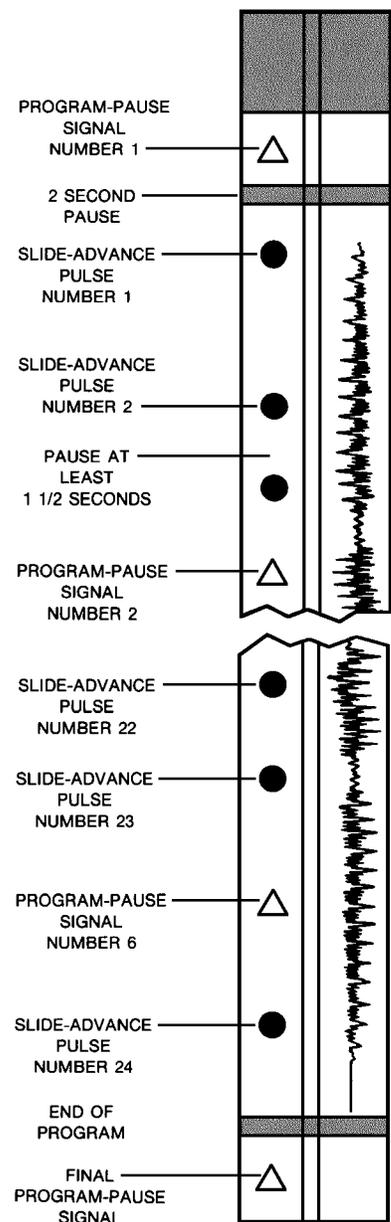

MAGNETIC CASSETTE TAPES

Cassette Tape Track Configuration of the *EKTAGRAPHIC* AudioViewer/Projector

The monaural cassette tape machine built into the AudioViewer/Projector is used essentially like any other—with the exception that it uses tracks 1 and 2 for the audio portion of the program and tracks 3 and 4 for 1000
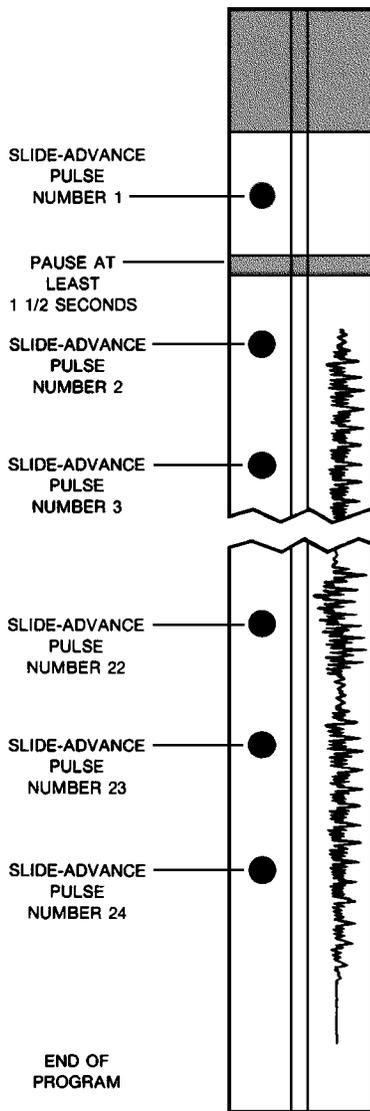

(Models 470 and 570AF)
TAPE TRACKS

SIGNALS	AUDIO
4 3	2 1

PROGRAM-PAUSE SIGNAL NUMBER 1

2 SECOND PAUSE

SLIDE-ADVANCE PULSE NUMBER 1

SLIDE-ADVANCE PULSE NUMBER 2

PAUSE AT LEAST 1 1/2 SECONDS

PROGRAM-PAUSE SIGNAL NUMBER 2

SLIDE-ADVANCE PULSE NUMBER 22

SLIDE-ADVANCE PULSE NUMBER 23

PROGRAM-PAUSE SIGNAL NUMBER 6

SLIDE-ADVANCE PULSE NUMBER 24

END OF PROGRAM

FINAL PROGRAM-PAUSE SIGNAL

Hz slide-advance pulses and 150 Hz program-pause signals. Like most cassette machines designed for audiovisual use, the tape is intended for recording and playing in one direction only and must be rewound before being replayed.

If the cassette is accidentally turned over and played in the wrong direction, you will hear the 1000 Hz slide-advance pulses (the "beeps") reproduced over the loudspeaker—not the soundtrack.
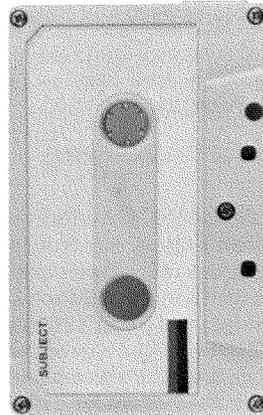
(Models 220 and 270)
TAPE TRACKS

SIGNALS	AUDIO
4 3	2 1

SLIDE-ADVANCE
PULSE
NUMBER 1

PAUSE AT
LEAST
1 1/2 SECONDS

SLIDE-ADVANCE
PULSE
NUMBER 2

SLIDE-ADVANCE
PULSE
NUMBER 3

SLIDE-ADVANCE
PULSE
NUMBER 22

SLIDE-ADVANCE
PULSE
NUMBER 23

SLIDE-ADVANCE
PULSE
NUMBER 24

END OF
PROGRAM

Playing Continuously Repeating Sound-Slide Programs

A silent or recorded endless-loop cassette having properly spaced slide-advance pulses can be used as a timing device to advance a sound-slide program designed to repeat continuously. Record slide-advance pulses (at least 1 1/2 seconds apart) on the endless-loop cassette at the intervals desired. Short endless-loop cassettes are preferred. *Be sure to use only the type that have sprocket teeth on the hub of the take-up reel.* Clean the metal heads and tape-guide path in the built-in cassette machine often because these tapes are heavily lubricated.

Model 570AF: We suggest using the built-in variable-electronic timer as the timing device to advance the continuously repeating program instead of an endless-loop cassette.

An endless-loop cassette.

Stereo Music Tapes

Cassette tapes that have audio recorded on all four tracks (such as those sold for playback on home cassette players) will trigger sporadic and unwanted slide advances (and program pauses, with Models 470 and 570AF).

Tapes having no audio recorded on tracks 3 and 4 (such as those recorded with an *EKTAGRAPHIC* AudioViewer/Projector or with most audiovisual cassette recorders) can be played satisfactorily.

Using a *KODAK* EC Remote Control with an *EKTAGRAPHIC* AudioViewer/Projector

A *KODAK* EC-1, EC-2, or EC-3 Remote Control (normally intended for use with *KODAK EKTAGRAPHIC* III and *EKTAGRAPHIC* Slide Projectors) can be connected to the remote-control outlet of an Audio-Viewer/Projector and used to remotely advance and reverse the tray. (The EC Remote Control can also be used to record slide-advance pulses when using the Models 270, 470, or 570AF).

If the *KODAK* EC Remote Control has a focus switch, it can be used to pause and restart the program tape during recording and playback and to record program-pause signals (with Models 470 and 570AF). (The focus switch on the EC Remote Control will *not* provide remote-focus capability.) Accidentally pressing the focus switch on the EC Remote Control in *both* directions while recording a program-pause signal on the tape may record an improper signal.

SPECIFICATIONS

Weight (approximate)—22 pounds (10 kilograms)

Built-In Viewing Screen—9 x 9 in. (229 x 229 mm); 12.1 in. (305 mm) corner to corner; recessed to resist impact; acrylic coated to minimize glare.

Magnification Ratio of Built-In Viewing Screen—7.15 with the 77 mm lens; 10.5 with the 56 mm lens.

Power Requirements—120 V ±10%, 60 Hz, 300 VA maximum, 2.2 A.

Power Cord—three-wire grounded, 8-ft., permanently attached.

Projection Lamp—ANSI Code DDM (19 V, 80 W) tungsten halogen. At HI (17.5 V nominal) average lamp life is 125 hours. At LO (14.5 V nominal) average lamp life is 1200 hours. Rated lamp life is approximate.

Optional Projection Lamp—ANSI Code DDS (21 V, 80 W) tungsten halogen. At HI, life expectancy is 5000 hours.

OPTICAL SYSTEM

Projection of Transparency Formats

The *EKTAGRAPHIC* AudioViewer/Projector can project any transparency format in the rear-screen or front-projection mode in a 2 x 2-inch (50 x 50 mm) mount, including 127-size, 126-size, 135-size, and 110-size transparencies in 2 x 2-inch mounts or *KODAK* 2 x 2 Adapters for 110 Slides.

The usable picture area for most slide transparency formats will overfill the built-in viewing screen. In front-screen projection, the full picture area of all transparency formats (with the exception of 38 x 38 mm super slides that are vignetted when used with the short focal-length lens) will be projected without image cropping.

EKTAGRAPHIC AudioViewer/Projector and *EKTAGRAPHIC* (or *CAROUSEL*) Slide Projector Image Sizes

When using the 77 mm *f*/3.5 normal lens in the AudioViewer/Projector, the front-projected image will be almost exactly the same size as with the same slide type in an *EKTAGRAPHIC* or *CAROUSEL* Slide Projector, when the *EKTANAR*, 3-inch (76 mm) *f*/3.5 Projection Lens is being used.

With the 56 mm *f*/3.0 image-magnifying lens, the image from the Audio-Viewer/Projector will be about one third larger (i.e., if the image is three feet wide with the 77 mm *f*/3.5 lens, it will be about 49 inches wide with the 56 mm *f*/3.0 lens). As a result, the image area is increased by about 50 percent.

Normal Lens (Front-Projection and Rear-Viewing Flat-Field Lens)—77 mm *f*/3.5.

Image-Magnifying Lens (Front-Projection and Rear-Screen Viewing)—56 mm *f*/3.0 lens for short projection distances and close-ups.

Mirrors—Mirrors to fold the light beam and to give correct image orientation are first-surface aluminized with a silicon-monoxide, hard-surface coating.

Focus Knob—Both the front and rear lens and the image-magnifying lens are focused by the manual focus knob.

ELECTRONICS

Signal-to-Noise Ratio—35 dB minimum at rated output.

Earphone (EAR) Outlet—1 W RMS continuous sine wave into 8 ohms; requires 1/4-inch (6.35 mm) plug.

Amplifier Power Output (External Loudspeaker Outlet)—5 W RMS continuous sine wave into 8 ohms with maximum harmonic distortion of 5 percent.

Internal Loudspeaker—3 x 5-inch (76 x 127 mm), 8-ohm, oval, base-mounted, omnidirectional.

Audio Recording Indicator—Red flickering light indicates that tape tracks 1 and 2 for audio are in the recording mode.

Signal-Recording Indicator—Illuminated green signal light indicates that signal tracks 3 and 4 for 1000 Hz slide-advance pulses (and 150 Hz program-pause signals for Model 470 and Model 570AF) are in the recording mode.

Output Impedance—8 ohms.

Microphone Impedance—200 ohms at 1000 Hz.

Microphone Jack Configuration—2 prong.

    Large Jack Size—Accepts 9/64-in. dia. (3.6 mm) plug.

    Small Jack Size—Remote tape control jack is 1/10 in. dia. (2.5 mm) plug.

Recommended Headphone Impedance—150 to 2000 ohms (8 to 150 acceptable).

External Loudspeaker Jack Size—Accepts 1/4 in. dia. (6.35 mm) plug.

Rewind/Fast Forward Timing—Approximately 95 seconds for a C-60 compact cassette.

Wow and Flutter—0.45 percent maximum.

Tape Speed—In play and recording modes, 1.875 ips (4.76 cm/sec) ± 3 percent.

Slide-Advance Pulses

Spacing—At least 1 1/2 seconds between the start of two successive pulses are required.

Frequency—1000 Hz ± 5 percent.

Duration—0.45 ± 0.07 seconds.

Level—−4 dB, ± 4 dB (ref to 250 nWb/m at 315 Hz.

Program-Pause Signals

Spacing—At least 2 seconds between the start of two signals or between the end of a signal and the start of recorded audio (any tape track) are required.

Frequency—150 Hz ± 5%.

Duration—Same as slide-advance pulses.

Level—Same as slide-advance pulses.

Ventilation—A dual blower system cools the lamp and the motor.

Internal Storage—Power cord, slide tray, microphone, remote-control, accessory *KODAK* AudioViewer EC Interconnect Cord, and spare lamp. For safety, the storage compartment is isolated from the electrical components. The AudioViewer/Projector operates without danger of overheating even if the storage compartment is filled.

Elevation-Adjustment Range—Up to 8 degrees.

Lubrication—All bearings are self-lubricating; no oiling is needed. After 1000 hours of operation, the Audio-Viewer/Projectorshould be serviced at a *KODAK* Equipment Service Center (addresses on back cover).

Thermal Fuses—Your *EKTAGRAPHIC* AudioViewer/Projector is equipped with two thermal fuses to prevent overheating. If the AudioViewer/Projector gets too hot, the fuse on the motor will open and power to the AudioViewer/Projector will be shut off. When the AudioViewer/Projector cools, the fuse will reset automatically and power will be restored. If the second fuse (located near the lamp-mounting bracket) opens, it will not reset. Call a *KODAK* Equipment Service Center to have it replaced and the Audio-Viewer/Projector repaired (if necessary). Be sure to correct the cause of overheating before using the Audio-Viewer/Projector again.

> **NOTE:** The *KODAK* EC Automatic Timer and the *KODAK* EC Sound-Slide Synchronizer cannot be used with an *EKTAGRAPHIC* AudioViewer/Projector.

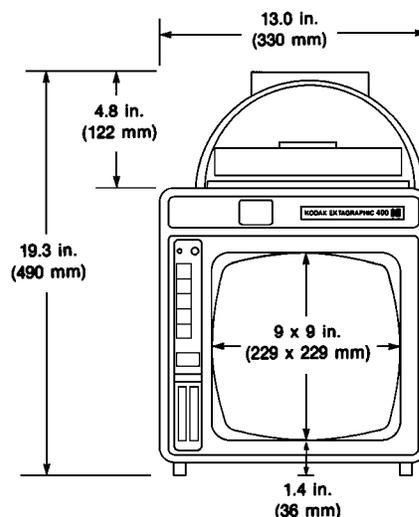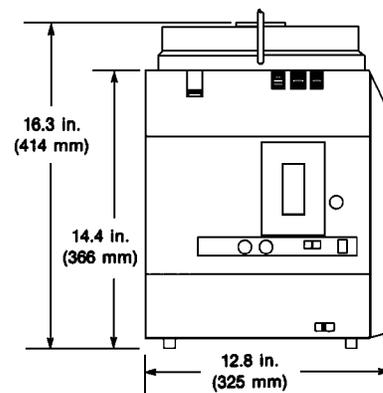## DIMENSIONAL LINE DRAWINGS FOR THE *KODAK EKTAGRAPHIC* AUDIOVIEWER/PROJECTOR

Height—14.4 inches (366 mm) without a tray.

Width—13 inches (330 mm)

Length—12.8 inches (325 mm)

Shown below are dimensional line drawings for anyone wishing to build projection accessories for the Audio-Viewer/Projector.

> **NOTE:** If you modify your Audio-Viewer/Projector, obliterate UL and CSA labels. Modified equipment must conform to electrical and other appropriate codes and to safety requirements. This AudioViewer/Projector is subject to minor appearance changes.

16.3 in. (414 mm)

14.4 in. (366 mm)

12.8 in. (325 mm)

13.0 in. (330 mm)

4.8 in. (122 mm)

19.3 in. (490 mm)

9 x 9 in. (229 x 229 mm)

1.4 in. (36 mm)

WARRANTY

KODAK EKTAGRAPHIC AudioViewer/Projector

Models 220
      270
      470
      570AF

Kodak warrants this *KODAK EKTAGRAPHIC* AudioViewer/Projector to function properly for one year from date of purchase. *Kodak makes no other warranties, express, implied or of merchantability, for this equipment.*

Carefully follow all instructions in this pamphlet to get the best results and to prevent damage to your Audio-Viewer/Projector. If this Audio-Viewer/Projector does not function properly within the warranty period, Kodak will repair or replace the Au-dioViewer/Projector, at its option and at no charge, unless damaged by misuse or other circumstances beyond Kodak's control.

For assistance in using this Audio-Viewer/Projector, contact a dealer in Kodak audiovisual products. Such dealers are listed in the Yellow Pages of your local telephone directory under Audiovisual Equipment and Supplies. For service on this Audio-Viewer/Projector, return it through a dealer in Kodak audiovisual products or one of the Kodak Equipment Service Centers listed on the right. To help us get your AudioViewer/Projector back to you promptly, please enclose a note giving details of the problem, date of purchase, and your complete name and address.

Repair or replacement is Kodak's only obligation. *Kodak will not be responsible for any consequential or incidental damages resulting from the sale or use of this Audio-Viewer/Projector, even if loss or damage is caused by the negligence or other fault of Kodak.*

EASTMAN KODAK COMPANY EQUIPMENT SERVICE CENTERS

U.S.:
Call 1-800-242-2424
for service information.

Toronto, ON M6M 1V3:
Kodak Canada, Inc.
3500 Eglinton Ave. West

Presentation Technologies

EASTMAN KODAK COMPANY • ROCHESTER, NEW YORK 14650